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LISTS OF SPECIES

Avifauna of Dinira National Park, Venezuela.

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Abstract: This is a preliminary inventory of the avifauna of Dinira National Park (DNP), northeastern of Venezuelan Andes, a region that is poorly known ornithologically. In the field work (30 days), 127 bird species (10 orders, 41 families) were recorded, ca. 9 % of the total birds known to Venezuela. From them, just three corresponding to endemic species (2.4 %) whereas 14 (11.0 %) were migrants. Also, new important range extensions were documented, especially for some birds previously reported in Táchira and Mérida states (*Merganetta armata* and *Dendrocincla tyrannina*). From recorded species 33 are threatened in different levels, but only five of them are protected by Venezuelan laws.

Introduction

In 1988, Venezuelan government created Dinira National Park (DNP) in the Andes of Venezuela, an area that includes part of Lara, Portuguesa, and Trujillo states (Venezuela 1988). The name "Dinira" come from the Caquetio indigenous language and it means "sharp-pointed hills". This Park was created to protect six important watersheds: Tocuyo, Curarigua, Morere, Bocono, Guanare, and Motatan (Peralta 1996), nonetheless this conservation unit was established without local assessment of the biological diversity.

The avian diversity of the Dinira National Park has not been well studied yet. Just Lentino and Esclasans (2005) have reported 94 bird species for DNP without detailed information about it species composition. This Park is one of the 72 important bird's areas (IBA's) in Venezuela (Lentino and Esclasans 2005); however is one of the IBA's with deficient information about Neotropical migratory birds (BirdLife 2006). Also, DNP is located within Venezuelan Monate Center, one of the 33 areas of endemism of South America (Cracraft 1985), and its Paramos could be a hotspot for birds due their isolation from other Paramos of the region.

Here we present the results of a bird's inventory of Dinira National Park which is part of a wildlife study in the area.

Materials and methods

Study Site

With 45,328 ha, Dinira National Park is found in the northeastern of the Andes mountain chain of Venezuela. It is located in the Sierra de Barcacoas and Portuguesa, a shared area between Lara, Portuguesa, and Trujillo states (Figure 1). In general, the geomorphology of the Park is composed by high and long slope mountains with sharp forms. The annual temperature and precipitation range between 6-22 °C and 642-2,100 mm, respectively (Weidmann et al. 2003). Three ecological units are recognized in DNP: (I) Cloudy forest (1,600-3,000 m), a forest type with canopy between 20-30 m height, multi-stratified, with abundant vines and epiphytic; it constitutes the highest limit of Andean forest in Venezuela; this ecological unit is usually sub-divided in three forest types: Pre-montane Evergreen Forest, Montane Semideciduous Forest, and Montane Evergreen Forest, which constitute almost 90 % of the Park vegetation; (II) Bushes (1,600-2,000 m), a shrub formation with < 5 m height mono-stratified with variable physiognomy, according to the weather conditions; it can be sub-divided in two vegetal formations: Pre-montane Semi-deciduous Bushes and Montane Evergreen Bushes, covering 4 % of the Park surface; and (III) Paramo (≥ 3,000 m) characterized by the presence of rosette plants (*Speletia* sp.); in this ecological unit, temperature is usually under 9 °C and cover around 5 % of the mountains.

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Field work was done in four localities in the park in the park (Figure 1):

a) Buenos Aires, state of Lara: A Montane Evergreen Forest located in the east of the park (1,900 m) with some open areas for cattle ranching and crops. Surveys were conducted in April from 21 to 30, 2005.

b) Cascada El Vino, state of Lara: A Pre-montane Semideciduous Bushes located in the north of the park (1,700 m) with a moderate level of human disturbance because it is used by tourists. Field work at this site was conducted in August from 9 to 11, 2005.

c) Paramito, Hacienda Santa Teresa, state of Lara: A Montane Evergreen Forest located in the north of the park (1,650 m) and close to Cascada El Vino. It presents some coffee plantations and open areas for cattle ranching. Surveys were conducted in August from 12 to 18, 2005.

d) Las Antenas, state of Trujillo: A Montane Evergreen Forest located in the north of the park (2,550 m) with low human disturbance. Field work was conducted from November 29 to December 9, 2005.

Data Collection

Birds were surveyed using mist-nets and direct observations following the methodology of the National Wildlife Inventory Program of Venezuela (MARN 2001). Direct observations were done every morning from 06:30 to 11:00 h using 10x42 binoculars, and six mist nets (12 m wide, 2.5 high, 30 mm mesh) were placed from 07:00 to 17:30 h. A total of 120 h of observation and 791 h of mist-nettings were performed during 30 days of field work.

Data Analysis

Taxonomy follows Hilty (2003). The ecological sensibility was defined considering the categories of the red list (IUCN 2006), Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES 2007), and *Lista Oficial de los Animales de Caza de Venezuela* (Venezuela 2002). All specimens collected (90) were deposited at the *Museo de la Estación Biológica de Rancho Grande* in Maracay, Venezuela.

Results

A total of 127 bird species were recorded during the study, which represents 32 new bird records for DNP (Appendix 1). From them three endemic species were found in Las Antenas: *Coeligena eos* (Trochilidae), *Myioborus albifrons* (Parulidae), and *Hemispingus reyi* (Emberizidae),. Also 14 migrant species were recorded along all surveyed sites: four Neartic complete migrants (*Cathartes aura*, *Actitis macularia*, *Setophaga ruticilla*, and *Piranga rubra*), two austral complete migrants (*Tyrannus savanna* and *Notiochelidon cyanoleuca*), four Neartic partial migrants (*Pyrocephalus rubinus*, *Sayornis nigricans*, *Troglodytes aedon*, and *Carduelis psaltria*), and four austral partial migrants (*Phalacrocorax brasilianum*, *Elaenia flavogaster*, *Pitangus sulphuratus*, and *Zonotrichia capensis*).

According to the *Lista Oficial de Animales de Caza de Venezuela*, all the species recorded in DNP are included in it, but the government just maintains a permanent closed hunting season on *Merganetta armata* (Anatidae), *Geranoaetus melanoleucus* (Accipitridae), *Aratinga acuticaudata* (Psitacidae), *Andigena nigrirostris* (Ramphastidae), and *Ramphastos vitellinus* (Ramphastidae). Five species are considered Least Concern and 29 are catalogued in Appendix II of the Convention on International Trade in Endangered Species (CITES) (see Appendix 1.)

New significant range extensions for 10 bird species were found in DNP, which correspond to Torrent Duck (*Merganetta armata*), Black-chested Buzzard-Eagle (*Geranoaetus melanoleucus*), Narrow-tailed Emerald (*Chlorostilbon stenura*), Collared Inca (*Coeligena torquata*), Buff-tailed Coronet (*Boissonneaua flavescens*), Ringed Kingfisher (*Megaceryle torquata*), Amazon Kingfisher (*Chloroceryle amazona*), Channel-billed Toucan (*Ramphastos vitellinus*), Tyrannine Woodcreeper (*Dendrocincla tyrannina*), and Yellow-billed Cacique (*Amblyocercus holosericeus*). Families Thraupidae, Tyrannidae, and Trochilidae had the greater number of species: 15, 13, and 12 respectively. This composition was similar in all the sample sites and the species richness change from 29 species in El Vino to 67 in Buenos Aires.

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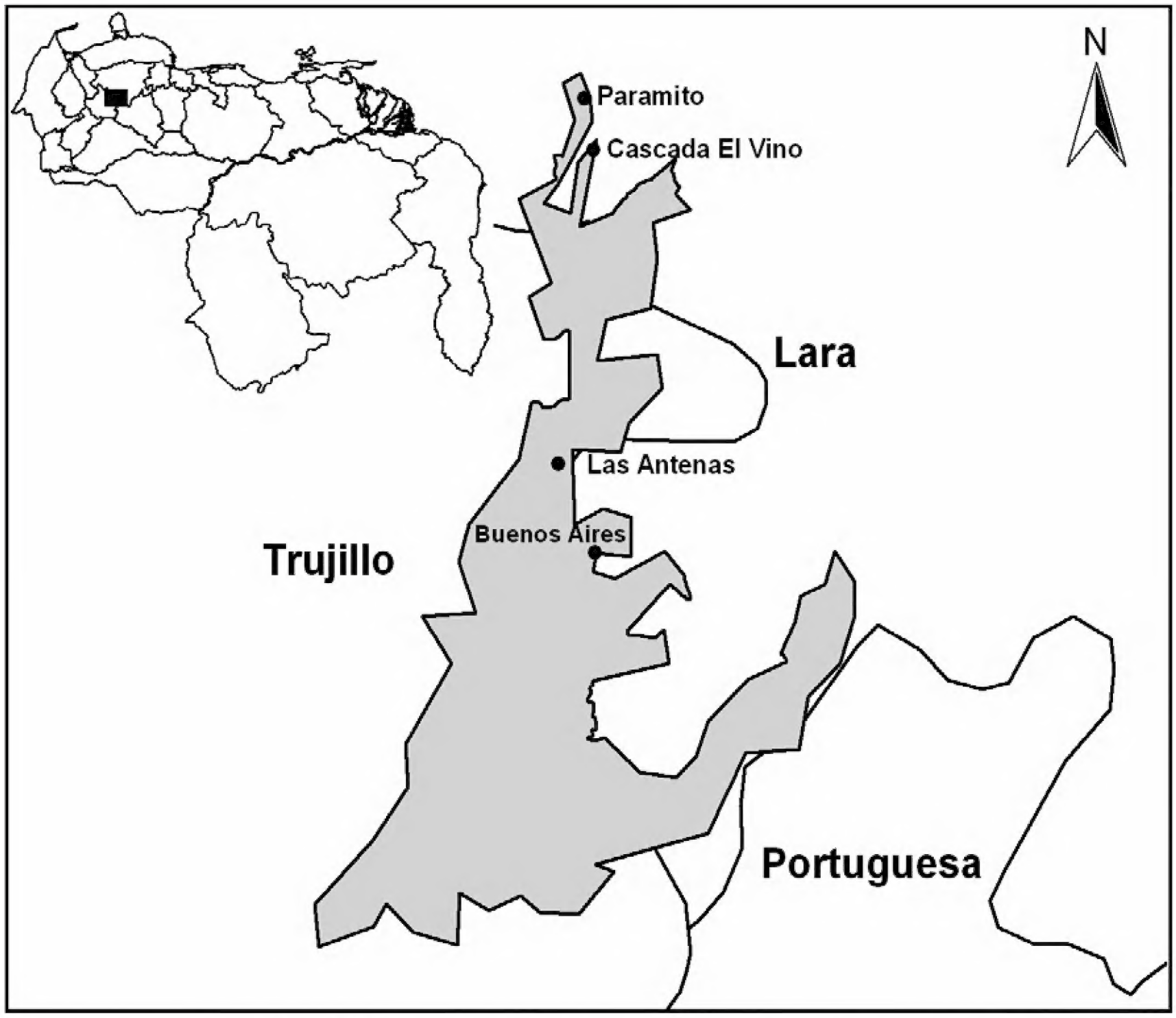

Figure 1. Map of Dinira National Park denoting the four locations surveyed (Paramito, Cascada El Vino, Las Antenas, and Buenos Aires) during an ornithological study in 2005.

Discussion

The species richness was increased in 127, which represents 32 new bird records for DNP to the previous 94 reported by Lentino and Esclasans (2005). We are unable to indicate which species are the new records for DNP because Lentino and Esclasans (2005) do not provide a species list in their work.

Migratory birds were represented with only 8 % of the 168 reported in Venezuela (Lentino 2003), this low number of migrant species is influenced because the lowest surveyed locality is 1,650 m and at this elevation the occurrence of migrant birds is low (Terborgh and Faaborg 1980); furthermore the field work was done in dates out of the incidence of migratory birds.

Also, endemic species were represented in low number representing 5 % of the total endemic species in Venezuela (55 species). Sixteen bird species in DNP are considered as "indicator species" in the Northern Andes (Stotz et al. 1996) which is a good indicator of the bird community and habitat conditions.

When comparing with Yacambu National Park (YNP) (Goodwin and Lentino 1992), DNP hold 50 % of the number species presented in Yacambu, the endemics species are similar (four in YNP) and the migrant species in YNP are greater. In other research in the Venezuelan Andes, Jones et al. (2002) found a greater number of species (181) in a lower elevation study area.

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This superior species richness in both cases is due to the lower elevation of their study area, previous researches in Neotropical environments (e.g. Verea 2001; Martinez and Rechberguer 2007) indicate a decrease in the birds species when increase the elevation. Also a larger sampling effort and the field work season could influence on the results. More field surveys are necessary to better understand the avifauna of DNP.

During the study, interesting information about the bird distribution of ten species was obtained. These correspond to the Torrent Duck (*Merganetta armata*) which was previously known only from Táchira and Mérida states, where is a fairly common species (Fjeldså and Krabbe 1990; Hilty 2003). On April 25 a sub-adult male was collected in a fast flowing river in Buenos Aires; also Black-chested Buzzard-Eagle (*Geranoaetus melanoleucus*) was an uncommon to fairly common raptor inhabiting Paramo and mountain canyons only in the state of Mérida between 3,300-4,500 m (Fjeldså & Krabbe 1990; Hilty 2003). On August 10 an adult specimen was sighted soaring in Cascada El Vino at 1,600 m. This locality hold the same habitat characteristic previous reported for the species (Ferguson-Lee and Christie 2001); Narrow-tailed Emerald (*Chlorostilbon stenura*) has been reported in both slopes of the Venezuelan Andes in Táchira and Mérida, and in the East slope of Merida (Hilty 2003). On August 15 an adult male was captured in mist-nets at Paramito; from Collared Inca (*Coeligena torquata*), six adult male were captured in Buenos Aires between April 22 to 26, a species reported as fairly common resident of cloud forests in Táchira, Mérida, and Trujillo (Hilty 2003); Buff-tailed Coronet (*Boissonneaua flavescens*) had a poorly known distribution with a scarce reports in south Táchira, north Mérida, and South-East Trujillo (Hilty 2003). On the week of 22 April 2005, four adult were captured in Buenos Aires; Ringed Kingfisher (*Megaceryle torquata*) had only one record in the Andes, south Lara at 1,400 m, common among bodies of inland freshwater (Hilty 2003). On April 24 an adult was sighted at 1,900 m along the river in Buenos Aires; Amazon Kingfisher (*Chloroceryle amazona*) with few record in the state of Táchira and no previous reports in Mérida, is supposed to be in Lara, but not confirmed record exist (Hilty 2003). An adult male was sighted in Paramito on August 17. Channel-billed Toucan (*Ramphastos vitellinus*) has been reported in Táchira and Barinas states, also in the northwest of Lara, no previous records in Mérida, Trujillo or the rest of Lara (Hilty 2003). Two adult were observed in the forest of Buenos Aires on April 27; Tyrannine Woodcreeper (*Dendrocincla tyrannina*) is a poorly known species inhabiting humid and wet montane forests in the state of Táchira (Hilty 2003). On December 7, an adult female was collected in Las Antenas at 2,550 m. This place is located more than 250 km of the closer known locality in Táchira; Yellow-billed Cacique (*Amblyocercus holosericeus*): An uncommon and resident species of the humid and wet high montane forests in the eastern Andes of Venezuela, this bird has been recorded in Táchira and Mérida states between 1,800 and 2,000 m (Hilty 2003). In DNP, it was recorded in two localities: on April 23 an adult was sighted in Buenos Aires while on December 7 an adult female was collected in Las Antenas at 2,550 m. The habitat in both sites is similar to the previous described by Fjeldså and Krabbe (1990).

The new range distribution presented here constitute the northernmost localities know for five species (*Merganetta armata*, *Dendrocincla tyrannina*, *Chlorostilbon stenura*, *Coeligena torquata*, and *Boissoneaua flavescens*) which distribution in the Andes had been reported (Hilty 2003) only in Táchira and Mérida states, Venezuela.

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Appendix 1

Birds of four localities studied at Dinira National Park, Venezuela:

TAXA	Buenos Aires (Lara)	El Vino (Lara)	Paramito (Lara)	Las Antenas (Trujillo)
Tinamiformes				
Tinamidae				
Nothocercus bonapartei [c]	X			X
Podicipediformes				
Podicepedidae				
Tachybaptus dominicus			X	
Pelecaniformes				
Phalacrocoracidae				
Phalacrocarax brasilianum [i]			X	
Anseriformes				
Anatidae				
Merganetta armata [a]	X			
Falconiiformes				
Cathartidae				
Coragyps atractus [d]	X	X	X	X
Cathartes aura [d, f]	X	X	X	X
Accipitridae				
Geranoaetus melanoleucus [a, d]		X		
Buteo magnirostris [d]	X	X	X	
Buteo brachyurus [d]			X	
Falconidae				
Milvago chimachima [d]		X		
Caracara cheriway [d]		X	X	
Falco sparverius [d]	X	X	X	
Galliformes				
Cracidae				
Ortalis ruficauda	X	X	X	X
Penelope argyrotis	X			
Penelope montagnii				X
Odontophoridae				
Colinus cristatus	X		X	
Gruiformes				
Rallidae				
Aramides cajanea	X		X	
Charadriiformes				
Jacanidae				
Jacana jacana			X	
Scolopacidae				
Actitis macularia [e, f]			X	
Columbiformes				
Columbidae				
Columba fasciata	X	X	X	X
Zenaida auriculata			X	
Leptotila verreauxi	X	X	X	
Psittaciformes				
Psittacidae				
Aratinga acuticaudata [d]			X	
Aratinga wagleri [d]	X			
Aratinga pertinax [d]	X		X	
Forpus passerinus [d]	X		X	
Touit dilectissima [d]				X

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Appendix 1. Continued.

TAXA	Buenos Aires (Lara)	El Vino (Lara)	Paramito (Lara)	Las Antenas (Trujillo)
Cuculiformes				
Cuculidae				
Piaya cayana	X		X	
Crotophagus ani	X		X	
Tapera naevia			X	
Strigiformes				
Strigidae				
Otus choliba [d]	X		X	
Bubo virginianus [d]			X	
Strix albitarsis [d]				X
Caprimulgiformes				
Caprimulgidae				
Caprimulgus longirostris				X
Caprimulgus rufus			X	
Apodiformes				
Apodidae				
Streptoprocne zonaris		X	X	
Trochilidae				
Phaethornis augusti [c, d]		X		
Colibri coruscans [d]	X			
Chlorostilbon mellisugus [d]			X	
Chlorostilbon stenura [a, d]	X			
Coeligena torquata [a, d]	X			X
Coeligena eos [b, d]				X
Boissonneaua flavescens [a, d]	X			
Ensifera ensifera [c, d]		X		
Heliangelus mavors [d]	X			X
Ocreatus underwoodii [d]	X			
Matallura tyrianthina [d]				X
Aglaiocercus kingi [d, e]	X			
Trogoniformes				
Trogonidae				
Pharomachrus auriceps				X
Coraciiformes				
Cerylidae				
Megaceryle torquata [a]	X			
Chloroceryle amazona [a]			X	
Piciformes				
Rhamphastidae				
Andigena nigrirostris [c, e]				X
Ramphastos vitellinus [a, d]	X			
Picidae				
Picumnus squamulatus	X		X	
Piculus rubiginosus			X	
Melanerpes rubicapillus			X	
Campephilus melanoleucus			X	
Passeriformes				
Furnariidae				
Synallaxis albescens	X		X	
Synallaxis cinnamomea	X			
Synallaxis unirufa [c]	X			X

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Appendix 1. Continued.

TAXA	Buenos Aires (Lara)	El Vino (Lara)	Paramito (Lara)	Las Antenas (Trujillo)
Dendrocolaptidae				
Dendrocincla tyrannina [a, c]				X
Dendrocincla fuliginosa				X
Formicariidae				
Grallaria ruficapilla	X			X
Rhinocryptidae				
Scytalopus meridanus				X
Tyrannidae				
Camptostoma obsoletum			X	
Elaenia flavogaster [i]	X		X	
Elaenia frantzii	X			X
Mecocerculus leucophrys	X			X
Serpophaga cinerea	X			
Mionectes olivaceus	X		X	X
Pyrocephalus rubinus [h]			X	
Sayornis nigricans [h]		X		
Ochthoeca diadema				X
Pitangus sulphuratus [i]		X	X	
Myiozetetes similis	X		X	
Tyrannus melancholicus	X	X	X	X
Tyrannus savana [g]			X	
Cotingidae				
Pipreola riefferii				X
Corvidae				
Cyanolyca armillata				X
Cyanocorax affinis			X	
Cyanocorax ynca	X	X	X	
Hirundinidae				
Notiochelidon cyanoleuca [g]			X	
Troglodytidae				
Thryothorus rutilus			X	
Troglodytes aedon [h]	X	X	X	
Troglodytes solstitialis				X
Henicorhina leucophrys [c]	X			X
Cinclidae				
Cinclus leucocephalus	X	X		
Turdidae				
Catharus fuscater [c]	X			X
Turdus fuscater	X	X	X	X
Turdus serranus	X		X	X
Turdus olivater			X	
Mimidae				
Mimus gilvus	X	X	X	
Parulidae				
Parula pitiayumi		X	X	
Setophaga ruticilla [f]			X	
Myioborus miniatus	X	X	X	
Myioborus albifrons [b]				X
Basileuterus nigrocristatus			X	X
Basileuterus tristriatus [c]	X			
Basileuterus coronatus [c]				X

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Appendix 1. Continued.

TAXA	Buenos Aires (Lara)	El Vino (Lara)	Paramito (Lara)	Las Antenas (Trujillo)
Thraupidae				
Coereba flaveola	X		X	
Conirostrum sitticolor [c]				X
Chlorospingus opthalmicus [c]	X	X	X	X
Hemispingus frontalis [c]	X			
Hemispingus reyi [b, c]				X
Piranga rubra [f]	X			
Thraupis episcopus	X	X	X	
Thraupis cyanocephala	X			X
Anisognathus lacrymosus [c]				X
Tangara cayana	X	X	X	
Tangara cyanicollis	X		X	
Diglossopis caerulescens				X
Diglossopis cyanea	X			
Diglossa lafresnayii				X
Diglossa albilatera	X			X
Diglossa sittoides [c]	X			
Cardinalidae				
Saltator coerulescens	X			
Emberizidae				
Sicalis flaveola			X	
Atlapetes semirufus	X	X		
Atlapetes schistaceus				X
Buarremon brunneinuchus	X			X
Zonothrichia capensis [e, i]	X	X	X	X
Icteridae				
Sturnella magna			X	X
Icterus icterus			X	
Icterus chrysater			X	
Icterus nigrogularis	X			
Amblycercus holosericeus [a, c, e]	X			X
Fringillidae				
Carduelis psaltria [h]	X	X	X	
TOTAL	**67**	**29**	**65**	**47**

Superscript types:
For species: a, New distribution range; b, Endemic (Lentino 2003; Hilty 2003); c, Indicator (Stotz et al. 1996).
For sensibility: d, Appendix II; e, Least Concern (IUCN 2006; CITES 2007).
For migration: f, Neartic complete; g, Austral complete; h, Neartic partial; i, Austral partial (Stotz et al. 1996).